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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,119	08/30/2006	Hiromoto Ohno	Q80874	7742

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EXAMINER	
LAO, MARIALOUISA	

ART UNIT	PAPER NUMBER
1621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,119	OHNO ET AL.	
	Examiner	Art Unit	
	Louisa Lao	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) *11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/21/07;08/30/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-10 and 12-13) in the reply filed on 12/4/07 is acknowledged.

2. Claim 11 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 12/14/07.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 recites the limitation "the hydrogen chloride" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. There is no hydrogen chloride in claim 1.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilmet et al. (US7179949, US`949).

9. The instant claims are drawn to a process for producing high purity 1,1,1,2-tetrafluoroethane and/or pentafluoroethane by the step of purifying a crude product obtained by reacting trichloroethylene and/or tetrachloroethylene with hydrogen fluoride comprised of a main product including 1,1,1,2-tetrafluoroethane and/or pentafluoroethane, hydrogen fluoride as an azeotropic component with the main product, and impurity ingredients including at least an unsaturated compound, wherein said purifying step includes a step of bringing a mixture obtained by newly adding hydrogen fluoride into said crude product into contact with a

fluorination catalyst in the vapor phase to reducing the content of the unsaturated compound contained in said crude product and a distillation step.

10. US`949 teaches a process for obtaining a hydrofluoroalkane which is purified of organic impurities, by any one of purification treatments, including *inter alia* reaction with hydrogen fluoride (see abstract, column 7 lines 37-41). HF is among reagents used in the synthesis of a hydrofluoroalkane by hydrofluorination, where the products of conversion are saturated (Hydro)fluoroalkanes, which are more environmentally acceptable than the olefinic or chlorofluoro organic impurities. US `949 teaches the reaction of the hydrofluoralkane with HF is carried out in the presence of a fluorination catalyst (column 7 lines 65-66); the mol ratio of HF to organic impurities is generally at least 1 mol/mol, and not more than 3 (col8 l20-30). US`949 teaches that the reaction can batchwise or continuous mode (col 8 l31-32); and the reaction can either be liquid (col8 line 53) or vapor phase (col9 line2). In the vapor phase variant, the fluorination catalyst's include metal oxides of Cr, Zr, Al and mixtures thereof; the reaction temperature at not more than 300°C (col 9 line 23). The organic impurities comprise chlorodifluoropropanes, chlorofluorobutanes or –butenes, (chloro)fluoro olefins (col 7 lines 53-58). US`949 contemplates the removal of residual HF from the product, which include distillation (col9lines35-42).

11. The instant claims differ from US`949 in that the hydrofluorocarbon formed and purified with HF in the instant claims are drawn specifically to 1,1, 1,2-tetrafluoroethane and/or pentafluoroethane.

12. However, at the time of Applicants' invention, one of ordinary skill in the art would have found it obvious to employ the method of removing organic impurities with the use of HF in the

presence of a fluorination catalyst starting with different but equivalent hydrofluoro –materials; since US`949 contemplates the process for obtaining *a hydrofluoroalkane* which is purified of organic impurities.

13. The artisan would have been motivated to employ the purification step using HF in the presence of a fluorination catalyst and reach a reasonable expectation of purifying other hydrofluoroalkanes, like 1,1, 1,2-tetrafluoroethane and/or pentafluoroethane to remove organic impurities; since US`949 contemplates the purifying step for *a hydrofluoroalkane.*

14. The recitation of alternate temperature ranges and ratios expressed as vol% are optimization steps that are within the normal undertaking of one of ordinary skill in the art at the time of the invention and would not require any inordinate degree of experimentation.

Optimizing such processes is *prima facie* obvious because an ordinary artisan would be motivated to use known processes from the art to make the process more efficient or explore economical advantages over the other. Merely modifying the process conditions is not a patentable modification absent a showing of criticality. In re Aller, 220 F.2d 454, 105 U.S.P.Q. 233 (C.C.P.A. 1955).

Claim Rejections - 35 USC § 102/103

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

18. Claim 10 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Manzer (US5185482, US`482 and US5345016, US`016) in view of Wilmet et al. (US7179949, US`949).

19. The instant claim is drawn to a l,l,l,2-tetrafluoroethane made by the process for producing high purity l,l,l,2-tetrafluoroethane and/or pentafluoroethane by the step of purifying a crude product obtained by reacting trichloroethylene and/or tetrachloroethylene with hydrogen fluoride comprised of a main product including l,l,l,2-tetrafluoroethane and/or pentafluoroethane, hydrogen fluoride as an azeotropic component with the main product, and impurity ingredients including at least an unsaturated compound, wherein said purifying step includes a step of bringing a mixture obtained by newly adding hydrogen fluoride into said crude product into contact with a fluorination catalyst in the vapor phase to reducing the content of the unsaturated compound contained in said crude product and a distillation step.

20. US`482 and US`016 teach a 1, 1, 1,2-tetrafluoroethane made by the reaction of HF and trichloroethylene in the presence of a catalyst.

21. The instant claim differs from US`482 and US`016 in that the purification step is not explicitly drawn out in the cited prior art references.

However, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) MPEP2113 [R-1]

22. Claims 12 and 13 are rejected as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wilmet et al. (US7179949, US`949 and Ohno et al. (US7045668, US`668).

23. The instant claims are drawn to an etching gas, and a cleaning gas comprising pentafluoroethane and/or hexafluoroethane made by the process for reacting 1,1,1,2-tetrafluoroethane and fluorine gas in the presence of a diluting gas, as set forth in claim 10.

24. US`668 teaches a hexafluoroethane used as an etching gas or cleaning gas (column 3 lines 8-9) made by the reaction of a mixed gas containing hexafluoroethane and chlorotrifluoromethane with HF, where said hexafluoroethane is reacted further fluorine in a gas phase in the presence of a diluent gas (see abstract). US`949 teaches a process of obtaining a hydrofluoroalkane, which is purified of organic impurities, by any one of purification treatments, including *inter alia,* reaction with HF (see abstract, column 7 lines 37-41).

25. The instant claims differ from cited prior art references in the process, i.e. the starting material to arrive at the desired hexafluoroethane that is an etching gas or cleaning gas.

However, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) MPEP2113 [R-1]

26. No claims are allowed.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MLouisa Lao whose telephone number is 571-272-9930. The examiner can normally be reached from 8:00am to 8:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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